REMARKS

This application has been reviewed in light of the Office Action dated January 13, 2004. Claims 1, 3, 4, 6 and 7 are now in this application. Claims 1 and 4 have been amended to define more clearly what Applicant regards as his invention. Claim 18 has been added to provide Applicant with a more complete scope of protection. Claims 1, 4 and 18 are in independent form. Favorable reconsideration is requested.

Claims 1, 3, 4 and 6 were rejected under 35 U.S.C. § 112, first paragraph, for lack of written description.

The claims have been carefully reviewed and amended as deemed necessary to ensure that they conform fully to the requirements of Section 112, first paragraph, with special attention to the point raised in paragraph 2 of the Office Action. In particular, to comply with the Examiner's request, it has been made clearer that the semiconductor region includes the resistor region, and that the plurality of potential supply portions are connected to each other through the resistor region formed in the semiconductor region, as described in the specification and shown in Fig. 5.[1/] Further, it has been made clearer in the amended claims that the plurality of independent potential supply portions are independent of the charge transfer region, the signal charge input portion and the signal charge output portion.

It is believed that the rejection under Section 112, first paragraph, has been obviated, and its withdrawal is therefore respectfully requested.

Claims 1, 3, 4 and 6 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent 4,139,784 (Sauer).

1/ Applicant stresses, nonetheless, that the claim scope is not limited by the details of the preferred embodiments.

Independent Claim 1 is directed to a charge transfer apparatus that comprises a semiconductor region of one conductivity type including a resistor region, and a charge transfer region of a conductivity type opposite to that of the semiconductor region, formed in the semiconductor region and joined to the semiconductor region to form a diode. In addition, a signal charge input portion is provided that is adapted to input a signal charge to the charge transfer region, as are a signal charge output portion adapted to accumulate the signal charge transferred from the charge transfer region, and a plurality of independent potential supply portions adapted to supply a potential gradient to the semiconductor region independently of the charge transfer region, the signal charge input portion and the signal charge output portion. According to Claim 1, the independent potential supply portions supply the semiconductor region with respectively different potentials, and are connected to each other through the resistor region formed in the semiconductor region. Also, according to Claim 1, the signal charge in the charge transfer region is transferred by the potential gradient formed by the plurality of potential supply portions, and is transferred by drift over all of the charge transfer region.

Referring to Fig. 7 of *Sauer*, a supply voltage Vc of an output side of a signal charge is a floating diffusion (FD) voltage forming output portion of the signal charge. In the structure recited in Claim 1, the independent potential supply portion and the signal charge output portion have a common structure. In at least this respect, the device of Claim 1 is plainly different from, and is not believed to be suggested by, *Sauer*.

According to *Sauer*, since the potential gradient that exists at the time of signal charge transfer is such that in the signal charge transfer, the signal charge itself is formed by the voltage Vc formed in the floating diffusion (FD) region, it is impossible to make the signal

charge transfer always stable. In contrast to that, in the structure recited in Claim 1, since the independent potential supply portion is completely independent of the charge transfer region, the signal charge input portion and the signal charge output portion, the most suitable potential gradient at the time of the charge transfer can be formed without being affected by the signal charge quantity. As a result, any size of signal charge quantity can be stably transferred.

Sauer fails to teach this special structure of the device of Claim 1, and in fact does not either disclose or suggest this technical problem, much less the solution provided by Applicant, or the advantage thereof.

For at least this reason, Claim 1 is believed to be clearly allowable over *Sauer*.

Independent Claims 4 and 18 recite features similar to those discussed above with respect to Claim 1, and therefore are also believed to be patentable over *Sauer* for the reasons discussed above.

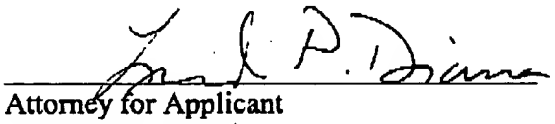
A review of the other art of record has failed to reveal anything which, in Applicant's opinion, would remedy the deficiencies of the art discussed above, as a reference against the independent claims herein. Those claims are therefore believed patentable over the art of record.

The other claims in this application are each dependent from one or the other of independent Claims 1 and 4, and are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual reconsideration of the patentability of each on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicant respectfully requests favorable reconsideration and early passage to issue of the present application.

Applicant's undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,



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